

RESOURCE MANAGEMENT CONFIDENCE TEST - EOC5

The capability to manage and monitor the configuration of the EOC includes configuring the EOC resources for multi-mission support, facilitating operational failure recovery during real-time contacts, and managing the real-time interface with the NCC. The logical strings are controlled for telemetry monitoring and command- i.e., they enable FOS users to receive and monitor telemetry from one or more spacecraft and one or more instruments. In addition, requests from a Command Activity Controller for command authority and a Ground Controller for Ground Control authority are received. The privilege is granted to authenticated users, and ensures that only one person has command authority for a single spacecraft at any one time.

Test Objectives:

The Resource Management Confidence Test will:

- demonstrate the ability to build various rooms and pages
- demonstrate the ability to shift displays between various rooms and pages
- verify the ability to assign key functions such as command activity controller and ground controller to various workstations
- verify the ability to protect privileged operations, such as commanding
- configure and de-configure logical processing strings
- demonstrate the ability to failover to redundant or standby elements
- demonstrate the ability to build an ECL command procedure.

Test Configuration:

Exhibit EOC5-1 illustrates the Resource Management Test configuration with EDOS V3 and the ETS MPS.

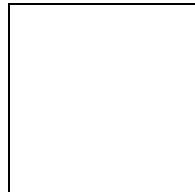


EXHIBIT EOC5-1: Resource Management Confidence Test Configuration

Participants and Support Requirements:

Participants:

EDOS LZPF M&O
ETS MPS Operator
EOC System Administrator
I&T Test Conductor

Communications:

1. Voice -
 - Telephone
 - CCL 74 Circuit - EOC/EDOS
 - CCL 94 Circuit - EOC/EDOS/ETS
 - CCL 113 Circuit - EOC/EDOS/EBnet

2. Data -

EBnet circuit between EOC to EDOS LZPF
EBnet circuit between EDOS LZPF to ETS MPS

3. IP addresses:

Operational LAN - 198.118.199.0
Support LAN - 198.118.200.0

Equipment and Software:

Hardware

-FOS Release B hardware to include:

- Multicast Server (3)
- Local System Manager (2)
- Real-Time Server (2)
- Data Server (2)
- File Server (3)
- RAID Unit (1)
- Laser Printer (4)
- Line Printer (4)
- Color Printer (4)
- FDDI Hub/Bridge (2)
- Time Server (2)
- FOT User Workstation (36)
- EOC Router (2)
- EBnet Router (2)
- Operational LAN (FDDI)
- Support LAN (FDDI)

Software

- FOS Release B software

Test Tools:

ETS MPS Release 1.3.0

Test Data:

| Description/Characteristics | Source | File/Script Name & Location |
|---|--------------------|-----------------------------|
| Housekeeping telemetry. AM-1 real-time data in CCSDS telemetry (TLM) packets in the form of Path Service EDUs (one of each TLM value bit size - 1, 8, 16, 32, 48; representative set of both discrete and analog parameters): <ul style="list-style-type: none">• S/C bus and instrument H/K telemetry data (16 kbps, APID = 1, VCID = 1) | ETS MPS, (EOC1) | rt_hk.scn |

Test Case Descriptions:

EOC5.1 - Display Control

This test verifies the ability to create new and modify existing instrument, spacecraft, and ground pages/rooms. Displays will be shifted between various pages, rooms, and views. Alphanumeric displays, graphs, tables, and schematics will be utilized to present the following conditions:

- Hardware Status
- Software Configuration
 - Monitor specified software component for changes in state.
 - Register permanent and transient software processes upon creation for monitoring
 - Unregister transient software processes upon termination
 - Types of management events reportable to MSS include: Faults, Performance, Security, and Accountability.
- System Performance
- Interface Activity

Requirements to be Verified:

EOC-9010#B EOC-9020#B EOC-9110#B

EOC5.2 - User Function Control

This test verifies the capability to assign key functions such as command activity controller (CAC) and ground controller to various workstations. An attempt will be made to bestow authority to a user outside the EOC.

A second console will take command activity controller authority away from an existing CAC and send a command. The first CAC will take back command activity controller authority away from the second CAC and send a command.

Requirements to be Verified:

EOC-9010#B EOC-9020#B EOC-9110#B

EOC5.3 - Logical String Control

This test verifies the capability to Configure and de-configure logical processing strings. A minimum of two FOS users will be on the system at the same time. Both users will be employing logical string control to demonstrate the interaction controls.

- Utilize various data sources - e.g. real-time, simulation, historical replay
- Employ various modes - e.g. operational, test, training.
- Perform in both active and backup states.
- An EOC user will request a dedicated logical string. Verification will be made that no other user can access that activity.
- An EOC user will request a shared logical string. Verification will be made that other users can access that activity.
- The ground controller (GC) will create and connect to a shared logical string. A second EOC user will request a mirrored connection to a logical string. Changes made to the string by the GC will be reflected on the second user's display.
- A second EOC user will request a tailored connection to a logical string. Changes made to the string by the GC will not be reflected on the second user's display. The second EOC user will then change the configuration without requesting Ground Control Privilege and the change will affect only the second user's display.

Requirements to be Verified:

EOC-8140#B EOC-9010#B EOC-9020#B EOC-9110#B
FOS-0020#B FOS-0025#B

EOC5.4 - Failover

This test verifies proper operations during system failover to redundant or standby elements. During normal operations the following EOC components will be caused to fail and the system monitored to assure uninterrupted, smooth transition to the backup component. Demonstrate that ECS has no single point of failure for functions associated with real-time operations of the spacecraft and instruments.

- Real-Time server failover
- Data server failover
- RAID controller failover
- Time server failover
- EBnet router failover
- FDDI concentrator failover
- FDDI-Ethernet hub failover
- FDDI router failover

Requirements to be Verified:

EOC-8130#B EOC-8140#B EOC-8160#B EOC-8220#B
EOC-8240#B EOC-9010#B EOC-9020#B EOC-9110#B
EOSD3710#B

EOC5.5 - Room Builder

This test verifies the ability to create new and modify rooms. Displays will be shifted between various pages, rooms, and views. A combination of alphanumeric displays, graphs, tables, and schematics will be utilized in the rooms.

Requirements to be Verified:

EOC-9010#B EOC-9020#B EOC-9110#B

EOC5.6 - Procedure Builder

This test verifies the ability to create, modify, syntax check, save, delete, and execute a PROC. The different types of PROCs will be created; emergency, command, ground, local, activity, and user-defined. The PROCs ability to properly process s/c commands, ground commands, mathematical operations, conditional statements, and other types of ECL directives will be verified.

Requirements to be Verified:

EOC-3080#B EOC-9010#B EOC-9020#B EOC-9080#B
EOC-9110#B

Test Procedures:

Test Set-up:

| Step | Station | Action | Expected Results Comments |
|------|---------|--|---|
| 1. | EOC | If the Data Server (DS) and Real Time Server (RTS) are running, skip to step 21 to start a User Work Station (UWS). | |
| 2. | EOC | Log onto an EOC console (mssoc2) as IVVTEST . Enter password. | UNIX Terminal window(s) open. Preferably bring up the Data Server and Real Time Server on a console that will not be used as a user workstation during the test. Note: Startup and shutdown procedures can be found in the Operations Tools Manual page 4-3. Use of mssoc2 is for consistency; operationally it will be used for LSM not as a Userstation. |
| 3. | EOC | Open SUN workstation room 2 (of 4). Click on button labeled Two . | UNIX Terminal window(s) open. Note: Use of 2 nd & 3 rd rooms are for organizational purposes only, it is not a required configuration. |
| 4. | EOC | Bring up the FOS Homepage on Netscape: netscape | FOS Database Access Page displayed. If not automatically displayed, check Netscape for a bookmark. If no bookmark enter the url: http://198.118.199.20/FosDbHome.html |
| 5. | EOC | Verify no endpoints exist: Click on Nameserver Database Click on Clear Form Click on Submit . | “Total matches = 0”. Note: If any endpoints exist watch for live processes/endpoints on the Data Server, Real Time Server, and on User Stations in the following steps. They must all be removed/killed prior to system startup. |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|--|---|
| 6. | EOC | Open SUN workstation room 1 (of 4). Click on button labeled One . | UNIX Terminal window(s) open. Note: Use of 1 st & 2 nd & rooms are for organizational purposes only, it is not a required configuration. Also, Data Server and Real Time Server may be started from different consoles. | Open two UNIX terminal windows if windows if none open. |
| 7. | DS | Remote login to the Data Server (fosec7): rlogin foseoc7 enter your “password” (used in step 1) | Successful login to Data Server. | |
| 8. | DS | Change directory and check for live processes. test (or cd /fos/test/am1/scripts/setup) ps -ef | Current processes will be displayed along with owner. Note: “ps -ef” truncates the process path/name. Use “ps -ax” to see process name | Path may be aliased as “test” |
| 9. | DS | Kill all undesirable processes - Processes with a /fos/test/am1/bin/... prefix and owner is not “root” (there may be others). Initially, as process owner, use MyKill to shutdown the process. If processes are still active use kill -USR1 “pid” for each active process, then use kill -9 “pid” for each undesirable process. Type ps -ef again to verify. | Notes: “kill -USR1” saves data created since the Data Server was brought up. Use “kill -9” only after “kill -USR” on the Data Server or Real Time Server; or data may be lost. The user may need to be logged in as the owner of the processes in order to kill them. | |
| 10. | RTS | From the 2 nd UNIX window in room 1, remote login to the Real Time Server (fosec6): rlogin foseoc6 enter your “password” (same as in step 1) | Successful login to Real Time Server. | |
| 11. | RTS | Change directory and check for live processes. test (or cd /fos/test/am1/scripts/setup) ps -ef | Current processes will be displayed along with owner and process id. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|---|---|
| 12. | RTS | Kill all undesirable processes - Processes with a /fos/test/Am1/bin/... prefix Initially, as process owner, use MyKill to shutdown the process. If processes are still active use kill -USR1 "pid" for each active process, then use kill -9 "pid" for each undesirable process. Type ps -ef again to verify. | | |
| 13. | DS | At the Data Server (fosec7), source the A2_DataServerStartup shell script from directory: /fos/test/aml/scripts/setup. source A2_DataServerStartup | The script will take 1- 5 minutes to complete. | |
| 14. | DS | Observe in the UNIX window: “Successful installation of signal handler FpLqSigHand”, and repeating “Waiting for activity” | If this message is not displayed, first wait a little longer, while waiting check the number of processes on the Data Server via netscape (next step). Most likely cause of failure is the presence of processes/endpoints prior to startup of Data Server. | |
| 15. | EOC | From Netscape in SUN workstation room 2, verify that 14 endpoints are now found by submitting a blank form. Back Submit | The number of endpoints found is 14. Using “ps -ax” 18 processes are active. | If the number of endpoints does not equal 14, be sure startup has completed, if so, use MyKill to clean out <u>all</u> processes. Restart from step 4. |
| 16. | RTS | At the Real Time Server (fosec6) in SUN workstation room 1, source the A2_RealTimeServerStartup shell script from directory: /fos/test/aml/scripts/setup. source A2_RealTimeServerStartup | The script will take 2- 5 minutes to complete. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|---|---|
| 17. | RTS | <p>Observe in the UNIX window: For FOS version A.2P7: “DECOM IS READY TO RECEIVE I CHANNEL PACKETS...” and “DECOM IS READY TO RECEIVE Q CHANNEL PACKETS...” For FOS version A.2P7+ECT1 patch (aka 1.1.0d): “Creating a ptcp coupler”</p> | <p>Note: The DECOM messages will appear several times, wait until they appear on two consecutive lines. (1.1.0d wait for “Creating a ptcp coupler”)</p> <p>There should not be any ‘FORMAT Problem: xxx -socket error’. This is an indication that endpoints existed prior to startup.</p> | The completion status and endpoint count are subject to change. |
| 18. | EOC | <p>From Netscape in the SUN workstation room 2, verify that 48 endpoints are now found by submitting a blank form.</p> <p>Back Submit</p> | <p>The number of endpoints found is 48.</p> <p>If the number of endpoints does not equal 48, be sure startup has completed, if so, use MyKill to clean out all Real Time Server (RTS) processes. Use Netscape with “foseoc6” in the “Entry ID” field to verify 0 endpoints on RTS. Use “ps -ef” to check for undesirable processes. Restart RTS.</p> | |
| 19. | EOC | Leave Data Server and Real Time Server windows open to view statuses. | | |
| 20. | EOC | If the console will be used as a User workstation, close Netscape. | Warning: Netscape and the Event_Display window can not be open at the same time (12/05/96). | |
| 21. | UWS | Log onto an EOC User Work Station (preferably not msseoc2). Enter your user name. Enter your password. | UNIX Terminal window(s) open. | |
| 22. | UWS | Change directory and check for live processes. test (or cd /fos/test/am1/scripts/setup) ps -aux | Current processes will be displayed along with owner. There should be no undesirable processes. If so, run MyKill as owner of processes. Then attempt ‘kill pid#’. Only use ‘kill -9’ is a last resort. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|---|---|
| 23. | UWS | Source the A2_UserStationStartup shell script from directory: /fos/test/aml/scripts/setup. source A2_UserStationStartup | The script will take 3 - 5 minutes to complete. The following six planning and scheduling windows will open: -Load Generator -Activity Definer -BAP Definer -Load_Manager -EOS Timeline -General Scheduler. | A Control Window will open last. Netscape endpoint count at this point is 57. |
| 24. | UWS | Iconize the 6 planning and scheduling windows. | If there are not 6 planning and scheduling icons and the Control Window, first wait a little longer; while waiting check the number of processes on the user station via netscape (enter console name in "Entry ID" field. Correct number of user station endpoints is 8 ?) | If unsuccessful startup, type MyKill , in user Station's UNIX window, kill undesirable processes, and restart user station only. If still unsuccessful call for help, you'll probably perform a complete shutdown and restart! |
| 25. | UWS | Bring up Event_Display window. Click on "Tools..." button in Control Window, select Event_Display , and OK . | Event_Display may take a few minutes to appear. | |
| 26. | UWS | Issue the ECL directive to connect to string 100: STRING CONNECT STRING=100 TLMTY PE=ALL CONFIG=MIRROR | Event message: "Successfully connected to String 100." | Approximately a 7 minute wait. |

| Step | Station | Action | Comments |
|------|---------|--|--|
| 27. | UWS | From a UNIX window, different from the window used for User startup, run the SI&T userstation configuration recording script: /home/ivvtest3/scripts/tconfig.scr | This can be done while waiting for the string to connect! Creates a file called testconfig. |
| 28. | UWS | From the UNIX window, rename the testconfig file. Mv testconfig <newname> | |
| 29. | UWS | Record the system configuration on the execution cover sheet. | System configuration recorded (while waiting for the string to connect). |
| 30. | UWS | Enable telemetry data archiving. ARCHIVE TLM =ENABLE <tlm TYPE> | Event message stating that telemetry archiving is enabled. |

Test Execution:
EOC5.1 Display Control

Summary of EOC5.1:

DISPLAY BUILDER

Create new Alphanumeric page, save page

Modify field properties

modify Label properties

modify Separator properties, save page

Create new Table page, save page

modify Table properties, save page

Create new 2D Graph page, save page

modify Graph properties, save page

Create new 3D Graph page, save page

modify Graph properties, save page

Create new Schematic page, save page

modify Schematic properties, save page

Transmit Housekeeping data from ETS, verify accuracy of all 10 page displays

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|---------------------------|-----------------|
| 1. | ~ | From the Control Window - MAIN Room, create new dynamic pages via the Display Builder (Alphanumeric display, Table, 2D Graph, 3D Graph). | | |
| 2. | USER1 | Start Display Builder (DB) via menu selections. Tools, Display_Builder (Double-click) | Display Builder displayed | OTM section 7.9 |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|--|--|
| 3. | ~ | Associate logical string(s) via the Data Source Management Dialog window for an alphanumeric list page. | Logical strings associated with new page. | need to identify types of strings based on available data. |
| 4. | ~ | <p>The following items will be added to the dynamic page:</p> <p>Ground Parameters:</p> <ul style="list-style-type: none"> 1.SDU_SCTIME 2.SDU_PCKT_SEQ 3.SDU_PCKT_APID <p>Housekeeping Parameters:</p> <ul style="list-style-type: none"> 3.EPS_SR_SA_RAT_ADJ_A (Formatted, Hex, Octal, Binary, and Scientific Notation) 4.GNC_TR_ST1_CCD (Formatted, Hex, Octal, Binary, and Scientific Notation) <p>Health & Safety Parameters:</p> <ul style="list-style-type: none"> 5.EPS_VR_BBATT_VA (Formatted, Hex, Octal, Binary, and Scientific Notation) 6.CDH_NR_SSR2_HKRECTR (Formatted, Hex, Octal, Binary, and Scientific Notation) | Items will be displayed in dynamic page and updated by tlm data. | Tlm data supported by EOC1 MPS tlm script. |
| 5. | USER1 | Click the Label button in the D_B Palette window. Drag the field onto the D_B Dynamic Page, near the top and click to place the label. | A label box outline is displayed on the D_B Dynamic Page. | Header Label |
| 6. | USER1 | Click the Separator button in the D_B Palette window. Drag the field onto the D_B Dynamic Page. Place under the Label box and click to place the field. | Inserts a horizontal separator. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|--|--------------------------|
| 7. | USER1 | Click the Field button in the D_B Palette window. Drag the field onto the D_B Dynamic Page. Place under the Separator box and click to place the field. | A field box outline is displayed on the D_B Dynamic Page underneath the Label box.. | SDU_SCTIME |
| 8. | USER1 | Click the Field button in the D_B Palette window. Drag the field onto the D_B Dynamic Page, under the previous Field and click to place the field. | Two field box outlines are displayed on the D_B Dynamic Page underneath the Label box. | SDU_PCKT_SEQ |
| 9. | USER1 | Click the Field button in the D_B Palette window. Drag the field onto the D_B Dynamic Page, under the previous Field and click to place the field. | Three field box outlines are displayed on the D_B Dynamic Page underneath the Label box. | SDU_PCKT_APID |
| 10. | USER1 | Click the Label button in the D_B Palette window. Drag the field onto the D_B Dynamic Page, under the previous Field and click to place the field. | A label box outline is displayed on the D_B Dynamic Page. | Housekeeping Label |
| 11. | USER1 | Click the Separator button in the D_B Palette window. Drag the field onto the D_B Dynamic Page. Place under the Label box and click to place the label. | Inserts a horizontal separator. | |
| 12. | USER1 | Generate 10 field boxes underneath the second Separator field. Repeat the following two steps 10 times: Click the Field button in the D_B Palette window. Drag the field onto the D_B Dynamic Page and click to place the field. | Ten field box outlines are displayed on the D_B Dynamic Page. | EPS_VR_BBAT_VA Formatted |
| 13. | USER1 | Click the Label button in the D_B Palette window. Drag the field onto the D_B Dynamic Page, under the last Field and click to place the label. | A label box outline is displayed on the D_B Dynamic Page. | Health & Safety Label |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|---|--------------------------|
| 14. | USER1 | Click the Separator button in the D_B Palette window. Drag the field onto the D_B Dynamic Page. Place under the third Label box and click to place the field. | Inserts a horizontal separator. | |
| 15. | USER1 | Generate 10 field boxes underneath the third Label field. Repeat the following two steps 10 times: Click the Field button in the D_B Palette window. Drag the field onto the D_B Dynamic Page and click to place the field. | Ten field box outlines are displayed on the D_B Dynamic Page. | EPS_VR_BBAT_VA Formatted |
| 16. | USER1 | Click the Separator button in the D_B Palette window. Drag the field onto the D_B Dynamic Page. Place under the last box and click to place the field. | Inserts a horizontal separator. | |
| 17. | USER1 | Edit the last Separator field to change to a vertical separator. Set X to: 420 Set Y to: 0 Set Width to: 8 Set Height to: 600 Click Horizontal/Vertical box, and select Vertical Click Apply . | A vertical separator appears to the right of the parameters, extending the length of the display. | |
| 18. | ~ | Associate parameters with display items via the Data Source Dialog window. | | ref:609pg7-11 |
| 19. | USER1 | Highlight the first field. From the Edit menu of the Palette window select Logical String Management . | Dynamic Page Data Sources window appears. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|--|--|
| 20. | USER1 | On the Dynamic Page Data Sources window select the following 4 options: AM1 Real-time Operational Default. Click Add , Click OK . | | No documentation available. FUI2060 |
| 21. | ~ | Create the filters of desired commands. | | FUI2060 |
| 22. | USER1 | From the Display Item Data Source window click Add . | Display Item Parameter Picker window appears. | |
| 23. | USER1 | From the Display Item Parameter Picker window click the Filter button. | Selection Filter window appears. | |
| 24. | USER1 | Select the following filtering items in the appropriate boxes, then click on Select for each. AM1 SDU AM1 EPS S AM1 EPS V AM1 GNC T AM1 CDH N Click OK . | Filter window closes and the filter selections appear in the Display Item Parameter Picker | |
| 25. | ~ | Enter the parameters onto the D_B Dynamic Page . | | FUI2060 step 14. |
| 26. | USER1 | Click the button for the filter selection AM1_SDU. | A list of filtered commands appear in the list box. | |
| 27. | USER1 | Select SDU_SCTIME and click the right arrow button. Click OK . | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page . | Actual parameter selections may vary depending on EOC1 MPS scenario parameter. |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|--|---|
| 28. | USER1 | Select the second field in the D_B Dynamic Page . | Second field highlighted. | |
| 29. | USER1 | From the Display Item Data Source window click Add . | Display Item Parameter Picker window appears. | FUI2060 step17. Is there an NCR that this selection should clear automatically? |
| 30. | ~ | Deselect the 1 st parameter from the selection box. | | |
| 31. | USER1 | Select SDU_SCTIME and click the left arrow button. | Parameter clears. | |
| 32. | ~ | Select Parameter 2 for Field 2. | | |
| 33. | USER1 | Select SDU_PCKT_SEQ and click the right arrow button. Click OK . | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page . | |
| 34. | USER1 | Select the third field in the D_B Dynamic Page . | 3 rd field highlighted. | |
| 35. | USER1 | From the Display Item Data Source window click Add . | Display Item Parameter Picker window appears. | FUI2060 step17. Is there an NCR that this selection should clear automatically? |
| 36. | ~ | Deselect the 2 nd parameter from the selection box. | | |
| 37. | USER1 | Select SDU_PACKET_SEQ and click the left arrow button. | Parameter clears. | |
| 38. | ~ | Select Parameter 3 for Field 3. | | |
| 39. | USER1 | Select SDU_PCKT_APID and click the right arrow button. Click OK . | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page . | |
| 40. | ~ | Select Parameter 4 for Fields 4 - 8. | | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|---|-------------------------------|
| 41. | USER1 | Select the fourth field in the D_B Dynamic Page. | 4 th field highlighted. | Field, not Label or Separator |
| 42. | USER1 | From the Display Item Data Source window click Add. | Display Item Parameter Picker window appears. | |
| 43. | USER1 | Disable the button for the AM1_SDU filter selection. | The list of filtered commands clears from the list box. | |
| 44. | USER1 | Enable the button for the AM1_EPS_S filter selection. | A list of filtered commands appear in the list box. | |
| 45. | USER1 | Select EPS_SR_SA_RAT_ADJ_A and click the right arrow button. Click OK. | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page. | |
| 46. | USER1 | Select the fifth field in the D_B Dynamic Page. | 5 th field highlighted. | |
| 47. | USER1 | From the Display Item Data Source window click ADD. | Display Item Parameter Picker window appears. | |
| 48. | USER1 | In the Display Item Parameter Picker window: Click OK. | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page. | |
| 49. | USER1 | Select the sixth field in the D_B Dynamic Page. | 6 th field highlighted. | |
| 50. | USER1 | From the Display Item Data Source window click ADD. | Display Item Parameter Picker window appears. | |
| 51. | USER1 | In the Display Item Parameter Picker window: Click OK. | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page. | |
| 52. | USER1 | Select the seventh field in the D_B Dynamic Page. | 7 th field highlighted. | |
| 53. | USER1 | From the Display Item Data Source window click ADD. | Display Item Parameter Picker window appears. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|--|----------|
| 54. | USER1 | In the Display Item Parameter Picker window: Click OK . | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page . | |
| 55. | USER1 | Select the eighth field in the D_B Dynamic Page . | 8 th field highlighted. | |
| 56. | USER1 | From the Display Item Data Source window click ADD . | Display Item Parameter Picker window appears. | |
| 57. | USER1 | In the Display Item Parameter Picker window: Select Parameter 5 for Fields 9 - 13. Click OK . | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page . | |
| 58. | ~ | Select Parameter 5 for Fields 9 - 13. | 9 th field highlighted. | |
| 59. | USER1 | Select the ninth field in the D_B Dynamic Page . | Display Item Parameter Picker window appears. | |
| 60. | USER1 | From the Display Item Data Source window click Add . | Filter list box is empty. | |
| 61. | USER1 | Disable the button for the AM1_EPS_S filter selection. | | |
| 62. | USER1 | Enable the button for the AM1_GNC_T filter selection. | A list of filtered commands appear in the list box. | |
| 63. | USER1 | Select GNC_TR_ST1_CCD and click the right arrow button. Click OK . | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page . | |
| 64. | USER1 | Select the tenth field in the D_B Dynamic Page . | 10 th field highlighted. | |
| 65. | USER1 | From the Display Item Data Source window click ADD . | Display Item Parameter Picker window appears. | |
| 66. | USER1 | In the Display Item Parameter Picker window: Click OK . | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page . | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|---|----------|
| 67. | USER1 | Select the eleventh field in the D_B Dynamic Page. | 11 th field highlighted. | |
| 68. | USER1 | From the Display Item Data Source window click ADD. | Display Item Parameter Picker window appears. | |
| 69. | USER1 | In the Display Item Parameter Picker window: Click OK. | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page. | |
| 70. | USER1 | Select the twelfth field in the D_B Dynamic Page. | 12 th field highlighted. | |
| 71. | USER1 | From the Display Item Data Source window click ADD. | Display Item Parameter Picker window appears. | |
| 72. | USER1 | In the Display Item Parameter Picker window: Click OK. | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page. | |
| 73. | USER1 | Select the thirteenth field in the D_B Dynamic Page. | 13 th field highlighted. | |
| 74. | USER1 | From the Display Item Data Source window click ADD. | Display Item Parameter Picker window appears. | |
| 75. | USER1 | In the Display Item Parameter Picker window: Click OK. | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page. | |
| 76. | ~ | Save page, exit D_B, eat lunch, reopen D_B, open existing page & continue editing. | ~ | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|--|----------|
| 77. | USER1 | <p>Save the Alphanumeric page as EOC51ALPHA1.</p> <p>In the D_B Palette window:</p> <p>click File</p> <p>click Save As</p> <p>Set path in Filter box to: /fos/test/aml/displaydefs/newpages</p> <p>click Filter button</p> <p>Click in the Selection box and type EOC51ALPHA1.</p> <p>Click OK</p> | Message that EOC51ALPHA1 was saved. | ' |
| 78. | USER1 | <p>Exit Display Builder</p> <p>In the D_B Palette window:</p> <p>click File</p> <p>click Quit</p> | D_B closes. | ' |
| 79. | ~ | Eat lunch | Display Builder opened | ' |
| 80. | USER1 | <p>Start Display Builder (DB) via menu selections.</p> <p>Tools,</p> <p>Display_Builder (Double-click)</p> | Display Builder opened | ' |
| 81. | USER1 | <p>Open existing page EOC51ALPHA1.</p> <p>In the D_B Palette window:</p> <p>click File</p> <p>click Open</p> <p>Set path in Filter box to: /fos/test/aml/displaydefs/newpages</p> <p>click Filter button</p> <p>Click in the Selection box and type EOC51ALPHA1.</p> <p>Click OK</p> | EOC51ALPHA1 page is displayed in the D_B Palette Window. | ' |
| 82. | ~ | Select Parameter 6 for Fields 14 - 18. | | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|--|---------------------|
| 83. | USER1 | Select the fourteenth field in the D_B Dynamic Page . | 14 th field highlighted. | |
| 84. | USER1 | From the Display Item Data Source window click Add . | Display Item Parameter Picker window appears. | |
| 85. | USER1 | Disable the button for the AM1_GNC_T filter selection. | Filter list box is empty. | |
| 86. | USER1 | Enable the button for the AM1_EPS_V filter selection. | A list of filtered commands appear in the list box. | |
| 87. | USER1 | Select EPS_VR_BBAT_VA and click the right arrow button. Click OK . | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page . | Near bottom of list |
| 88. | USER1 | Select the fifteenth field in the D_B Dynamic Page . | 15 th field highlighted. | |
| 89. | USER1 | From the Display Item Data Source window click ADD . | Display Item Parameter Picker window appears. | |
| 90. | USER1 | In the Display Item Parameter Picker window: Click OK . | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page . | |
| 91. | USER1 | Select the sixteenth field in the D_B Dynamic Page . | 16 th field highlighted. | |
| 92. | USER1 | From the Display Item Data Source window click ADD . | Display Item Parameter Picker window appears. | |
| 93. | USER1 | In the Display Item Parameter Picker window: Click OK . | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page . | |
| 94. | USER1 | Select the seventeenth field in the D_B Dynamic Page . | 17 th field highlighted. | |
| 95. | USER1 | From the Display Item Data Source window click ADD . | Display Item Parameter Picker window appears. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|--|---------------------|
| 96. | USER1 | In the Display Item Parameter Picker window: Click OK . | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page . | |
| 97. | USER1 | Select the eighteenth field in the D_B Dynamic Page . | 18 th field highlighted. | |
| 98. | USER1 | From the Display Item Data Source window click ADD . | Display Item Parameter Picker window appears. | |
| 99. | USER1 | In the Display Item Parameter Picker window: window: Click OK . | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page . | |
| 100. | ~ | Select Parameter 7 for Fields 19 - 23. | | |
| 101. | USER1 | Select the nineteenth field in the D_B Dynamic Page . | 19 th field highlighted. | |
| 102. | USER1 | From the Display Item Data Source window click Add . | Display Item Parameter Picker window appears. | |
| 103. | USER1 | Disable the button for the AM1_EPS_V filter selection. | Filter list box is empty. | |
| 104. | USER1 | Enable the button for the AM1_CDH_N filter selection. | A list of filtered commands appear in the list box. | |
| 105. | USER1 | Select CDH_NR_SSR2_HKRECTR and click the right arrow button. Click OK . | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page . | Near bottom of list |
| 106. | USER1 | Select the twentieth field in the D_B Dynamic Page . | 20 th field highlighted. | |
| 107. | USER1 | From the Display Item Data Source window click ADD . | Display Item Parameter Picker window appears. | |
| 108. | USER1 | In the Display Item Parameter Picker window: Click OK . | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page . | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|--|----------|
| 109. | USER1 | Select the twenty-first field in the D_B Dynamic Page . | 21 st field highlighted. | |
| 110. | USER1 | From the Display Item Data Source window click ADD . | Display Item Parameter Picker window appears. | |
| 111. | USER1 | In the Display Item Parameter Picker window: Click OK . | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page . | |
| 112. | USER1 | Select the twenty-second field in the D_B Dynamic Page . | 22 nd field highlighted. | |
| 113. | USER1 | From the Display Item Data Source window click ADD . | Display Item Parameter Picker window appears. | |
| 114. | USER1 | In the Display Item Parameter Picker window: Click OK . | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page . | |
| 115. | USER1 | Select the twenty-third field in the D_B Dynamic Page . | 23 rd field highlighted. | |
| 116. | USER1 | From the Display Item Data Source window click ADD . | Display Item Parameter Picker window appears. | |
| 117. | USER1 | In the Display Item Parameter Picker window: Click OK . | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page . | |
| 118. | ~ | From the Display Item Format window exercise the ability to modify the properties of fields. | Resize DIF window to see all options. ref:609 pg 7-10 | |
| 119. | | | | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|-------------------------------------|-----------------|
| 120. | ~ | Exercise the ability to modify the properties of labels. Modify the x, y, width, and height of a label. Modify the text displayed by the label. Modify the alignment of the label. Modify the color of the label. Modify the width of the label in characters. Modify the alignment of the label (Left, Centered, Right). | | ref:609 pg 7-10 |
| 121. | USER1 | Modify the first label fields as follows: Highlight the 1 st Label field Set the Width to: 200 (default is 100) Set the Height to: 30 (default is 20) Change the text to: Header Change the color to Yellow Change the Alignment to Left Click Apply | Label text changes to Header. | |
| 122. | USER1 | Modify the second label fields as follows: Highlight the 2 nd Label field Set the Width to: 200 (default is 100) Set the Height to: 30 (default is 20) Change the text to: Housekeeping Change the color to Yellow Change the Alignment to Center Click Apply | Label text changes to Housekeeping. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|--|--|
| 123. | USER1 | <p>Modify the third label fields as follows:</p> <p>Highlight the 3rd Label field</p> <p>Set the Width to: 200 (default is 100)</p> <p>Set the Height to: 30 (default is 20)</p> <p>Change the text to: Health & Safety</p> <p>Change the color to Yellow</p> <p>Change the Alignment to Right</p> <p>Click Apply</p> | Label text changes to Health & Safety. | |
| 124. | ~ | Modify the x, y, width, and height of a field. | Field position and size modified as desired. | |
| 125. | ~ | Modify the conversion of the value (Converted, Decoded, Raw). | The 3 types of values will display accurately when data received. | Each conversion type will be on a separate page. |
| 126. | USER1 | <p>Select each Label and Field sequentially from top to bottom. Perform the following modifications (as applicable):</p> <p>set x to 20,</p> <p>set y to the previous field's y + 20 (starting at 0)</p> <p>ensure "Conversion:" is set to Converted</p> <p>set the "Display Type" of the 1st of each group of 5 duplicate commands to: Formatted, the 2nd to HEX, 3rd to Octal, 4th to Binary, 5th to Scientific Notation</p> <p>set "Value Format - Alignment" to Center</p> <p>click Apply</p> | <p>All fields already set to Converted by default</p> <p>The 2 Housekeeping commands and the 2 Health&Safety commands will each be displayed with the 5 different "Display Types".</p> | Add 10 between groups of 5. |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|-------------------------------------|----------|
| 127. | USER1 | Save the Alphanumeric page as EOC51ALPHA1 . In the D_B Palette window: click File click Save As click in the Selection box and type EOC51ALPHA1 . Click OK . | | |
| 128. | USER1 | Save the Alphanumeric page again as EOC51ALPHA2 . In the D_B Palette window: click File click Save As... click in the Selection box and type EOC51ALPHA2 . | | |
| 129. | ~ | Modify the field components (label, units, flags). | | |
| 130. | USER1 | For SDU_SCTIME (Field 1), disable the Field Component - Label. Select SDU_SCTIME (Field 1). Click the Label button. Click Apply . | Parameter name no longer displayed. | |
| 131. | USER1 | For EPS_SR_SA_RAT_ADJ_A (Field 5), disable the Field Component - Label. Select EPS_SR_SA_RAT_ADJ_A (Field 5). Click the Label button. Click Apply . | Parameter name no longer displayed. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|--|----------|
| 132. | USER1 | For EPS_SR_SA_RAT_ADJ_A (Field 6), disable the Field Component - Units. Select EPS_SR_SA_RAT_ADJ_A (Field 6). Click the Units button. Click Apply . | Units placeholder no longer displayed. | |
| 133. | USER1 | For EPS_SR_SA_RAT_ADJ_A (Field 7), disable the Field Component - Label.. Select EPS_SR_SA_RAT_ADJ_A (Field 7) Click the Flags button. Click Apply . | Flags placeholder no longer displayed. | |
| 134. | ~ | Modify the width of the value in characters. Default is 20. | | |
| 135. | USER1 | For GNC_TR_ST1_CCD (Field 10), modify the Value Format Text Width to 10. Select GNC_TR_ST1_CCD (Field 10) Click the Text Width box. Enter 10 . Click Apply . | | |
| 136. | USER1 | For GNC_TR_ST1_CCD (Field 11), modify the Value Format Text Width to 30. Click the Text Width box. Select GNC_TR_ST1_CCD (Field 11) Enter 30 . Click Apply . | | |
| 137. | USER1 | For GNC_TR_ST1_CCD (Field 12), modify the Value Format Text Width to 40. Select GNC_TR_ST1_CCD (Field 12) Click the Text Width box. Enter 40 . Click Apply . | | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|--------------------------------|-----------------------------------|
| 138. | ~ | Modify the alignment of the value (Left, Centered, Right). Left is default, previous steps changed all alignments to center. | | |
| 139. | USER1 | For EPS_VR_BBAT_VA (Field 15), modify the Alignment to Left . Select EPS_VR_BBAT_VA (Field 15) Click the Alignment box. Click Left . Click Apply . | | |
| 140. | USER1 | For EPS_VR_BBAT_VA (Field 16), modify the Alignment to Right . Select EPS_VR_BBAT_VA (Field 16) Click the Value Format Alignment box. Click Right . Click Apply . | | |
| 141. | ~ | Modify the content of the label (Mnemonic, Descriptor). | Label displays as appropriate. | |
| 142. | USER1 | For CDH_NR_SSR2_HKRECTR (Field 20), modify the Label Format Content to Descriptor. Select CDH_NR_SSR2_HKRECTR(Field 20) Click the Content box. Click Descriptor . Click Apply . | Descriptor replaces mnemonic | A short description is displayed. |
| 143. | ~ | Modify the alignment of the units (Left, Centered, Right). Default is Left. | | OTM p7-10 |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|------------------------------------|-----------------|
| 144. | USER1 | For CDH_NR_SSR2_HKRECTR (Field 21), modify the Units Format Alignment to Center. Select CDH_NR_SSR2_HKRECTR(Field 21) Click the Units Format Alignment box. Click Center . Click Apply . | Units placeholder moves to center. | |
| 145. | USER1 | For CDH_NR_SSR2_HKRECTR (Field 22), modify the Units Format Alignment to Right. Select CDH_NR_SSR2_HKRECTR(Field 22) Click the Units Format Alignment box. Click Right . Click Apply . | Units placeholder moves to right. | |
| 146. | USER1 | Modify the alignment of the flags (Left, Centered, Right). | Flags aligned appropriately. | OTM p7-10 |
| 147. | USER1 | Save the Dynamic Page of modified alphanumeric displays as EOC51ALPHA2 . In the D_B Palette window: click File click Save As Set path in Filter box to: /fos/test/aml/displaydefs/newpages click Filter button Click in the Selection box and type EOC51ALPHA2 . Click OK | Page saved as EOC51ALPHA2. | |
| 148. | ~ | Create a new page with a table. Demonstrate the ability to modify the properties. Modify the x, y, width, and height of a table. Modify the associated parameters of a table. | | ref:609 pg 7-10 |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|--|---|
| 149. | USER1 | Create a new page with a table. Click Table Move pointer to D_B Dynamic Page and click to place table. | Table outline appears in window. | |
| 150. | USER1 | With table highlighted, from the Edit menu select Logical String Management . | Dynamic Page Data Sources window appears. | |
| 151. | USER1 | On the Dynamic Page Data Sources window select the following 4 options: AM1 Real-time Operational Default. Click Add , Click OK . | Dynamic Page Data Sources window closes. | No documentation available. FUI2060 |
| 152. | USER1 | In the Display Item Format window: set X to: 20 set Y to: 0 set Width to: 500 set Height to: 500 click Apply . | Table moves to position and size specified. Default Width and Height is 350 | |
| 153. | ~ | Associate logical string(s) via the Data Source Management Dialog window for a new Table page. | Logical strings associated with new page. | need to identify types of strings based on available data. ref:609pg7-11 |
| 154. | ~ | Associate parameters with display items via the Data Source Dialog window. | | FUI2060 |
| 155. | ~ | Create the filters of desired parameters. | | |
| 156. | USER1 | From the Display Item Data Source window click Add . | Display Item Parameter Picker window appears. | |
| 157. | USER1 | From the Display Item Parameter Picker window click the Filter button. | Selection Filter window appears. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|--|----------|
| 158. | USER1 | Select the following filtering items in the appropriate boxes, then click on Select for each. AM1 SDU AM1 EPS S AM1 EPS V AM1 GNC T AM1 CDH N Click OK . | Filter window closes and the filter selections appear in the Display Item Parameter Picker | |
| 159. | USER1 | Enable the button for the filter selection AM1_SDU . | A list of filtered commands appear in the list box. | |
| 160. | USER1 | Select SDU_SCTIME and click the right arrow button. Select SDU_PACKET_SEQ and click the right arrow button. Select SDU_PCKT_APID and click the right arrow button. Click OK . | Display Item Parameter Picker window closes. Selected parameters appears in the Display Item Data Sources window. | |
| 161. | USER1 | From the Display Item Data Source window click Add . | Display Item Parameter Picker window appears. | |
| 162. | USER1 | Disable the button for the AM1_SDU filter selection. | The list of filtered commands clears from the list box. | |
| 163. | USER1 | Enable the button for the AM1_EPS_S filter selection. | A list of filtered commands appear in the list box. | |
| 164. | USER1 | Select EPS_SR_SA_RAT_ADJ_A and click the right arrow button. Click OK . | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page . | |
| 165. | USER1 | From the Display Item Data Source window click ADD . | Display Item Parameter Picker window appears. | |
| 166. | USER1 | Disable the button for the AM1_EPS_S filter selection. | The list of filtered commands clears from the list box. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|--|----------|
| 167. | USER1 | Enable the button for the AM1_GNC_T filter selection. | A list of filtered commands appear in the list box. | |
| 168. | USER1 | Select GNC_TR_ST1_CCD and click the right arrow button. Click OK . | Display Item Parameter Picker window closes. Selected command appears in the first parameter field of the D_B Dynamic Page . | |
| 169. | USER1 | From the Display Item Data Source window click ADD . | Display Item Parameter Picker window appears. | |
| 170. | USER1 | Disable the button for the AM1_GNC_T filter selection. | The list of filtered commands clears from the list box. | |
| 171. | USER1 | Enable the buttons for the AM1_EPS_V and the AM1_CDH_N filter selections. | A list of filtered commands appear in the list box. | |
| 172. | USER1 | Select CDH_NR_SSR2_HKRECTR and click the right arrow button. Select EPS_VR_BBAT_VA and click the right arrow button. Click OK . | Display Item Parameter Picker window closes. Selected commands appears in the mnemonic field of the Display Item Data Sources window. “7 used of 50 available data sources.” Appears at bottom of Display Item Data Sources window | |
| 173. | USER1 | Save the Table page as EOC51TABLE1. In the D_B Palette window: click File click Save As click in the Selection box and type EOC51TABLE1 . | Page saved. | |
| 174. | ~ | Exercise the ability to modify the properties of Separators. Modify the x, y, width, and height of a separator. Modify the orientation of a separator (horizontal, vertical). | ref:609 pg 7-10 | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|---|--|
| 175. | ~ | Create a new page with 2D and 3D Graphs. Demonstrate the ability to modify the contents. | | |
| 176. | USER1 | Associate logical string(s) via the Data Source Management Dialog window for a new 2D graph page. | Logical strings associated with new page. | need to identify types of strings based on available data. |
| 177. | USER1 | Add 2D graph to the dynamic page. Click Graph Move pointer to D_B Dynamic Page and click to place graph. | 2D graph outline displayed in dynamic page. | |
| 178. | ~ | Exercise the ability to modify the properties of Graphs. Modify the x, y, width, and height of a graph. Modify the associated parameters of a graph. | | ref:609pg 7-10 |
| 179. | USER1 | In the Display Item Format window: set X to: 20 set Y to: 0 set Width to: 500 set Height to: 500 click Apply. | Table moves to position specified. Default Width and Height is 350 | |
| 180. | ~ | Associate parameters with display items via the Data Source Dialog window. | | ref:609pg7-11 |
| 181. | ~ | Create the filter of desired parameter. | | FUI2060 |
| 182. | USER1 | From the Display Item Data Source window click Add. | Display Item Parameter Picker window appears. | |
| 183. | USER1 | From the Display Item Parameter Picker window click the Filter button. | Selection Filter window appears. | |
| 184. | USER1 | Select the AM1 SDU filter items in the appropriate boxes, then click on Select. Click OK. | Filter window closes and the filter selection appears in the Display Item Parameter Picker | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|---|----------|
| 185. | USER1 | Enable the button for the filter selection AM1_SDU . | A list of filtered commands appear in the list box. | |
| 186. | USER1 | Select SDU_PACKET_SEQ and click the right arrow button. Click OK . | Display Item Parameter Picker window closes. SDU_PACKET_SEQ along with SDU_SCTIME appears in the Display Item Data Sources window. | |
| 187. | USER1 | Save the Dynamic Page as EOC51GRAPH1. In the D_B Palette window: click File click Save As click in the Selection box and type EOC51GRAPH1 . | Page saved. | |
| 188. | USER1 | Exit Display Builder . | Current room displayed. | |
| 189. | USER1 | Display the pages just created. Click on TimWins... Select EOC51ALPHA1 Click on OK Select EOC51TABLE1 Click on OK Select EOC51GRAPH1 Click on OK | Pages displayed. | |
| 190. | ETS | Initiate sending Housekeeping data to EOC. | Data received by EOC. | |
| 191. | USER1 | Verify data displayed and updated properly. | Original and modified pages display appropriately. | |
| 192. | ETS | Terminate Housekeeping data. | Data stopped. | |
| 193. | | | | |

EOC5.2 User Function Control

Summary of EOC5.2:

Connect as general user

attempt to create a string - request denied

attempt to take Ground control

attempt to take Command Control

Connect as a privileged user

Request Ground Controller (GC) privilege.

Create a string (101)

Create another string (102)

Request Command Activity Controller (CAC) privilege

attempt to create a string - request denied

attempt to take Ground control

send a command

Request Command Activity Controller (CAC) privilege from a second workstation - request granted

Send a command

Request Command Activity Controller (CAC) privilege from original CAC workstation - request granted

Send a command

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|--|---|
| 1. | USER1 | Attempt to create a string: STRING CREATE REALTIME SPACECRAFTID=AM1 DATABASEID=1_0 MODE=TEST SERVER=1 | Request denied due to insufficient privileges. | Use IIVVTEST1 for user without GC privileges. |
| 2. | USER1 | Connect to String 100, if not already connected. STRING CONNECT STRING=100 TLMTYPE=ALL CONFIG=MIRROR | After a few minutes Event_Display will show a successful connection to String 100. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|--|--|
| 3. | USER1 | Attempt to take ground control TAKE GROUNDCONTROL STRING=100 | Request denied due to insufficient privileges. | Use IIVVTEST1 for user without GC privileges. |
| 4. | USER1 | Attempt to take command control TAKE COMMAND STRING=100 | Request denied due to insufficient privileges. | Use IIVVTEST1 for user without CAC privileges. |
| 5. | CAC | Ensure user connected to a realtime mirrored string from initial startup procedures. | Mirrored connection established | |
| 6. | CAC | Request Command Activity Controller (CAC) privilege. TAKE COMMAND STRING=100 | Command authority changed to appropriate user and console. | |
| 7. | CAC | Click on Tools button | Tools menu displayed. | |
| 8. | CAC | Double-click on Command Control line. | CCW/CMW window is displayed | |
| 9. | CAC | In the CCW/CMW window enter: 100 for String ID, AM1 for Spacecraft ID. | Command Control Window (CCW) is displayed, not Command Monitor Window. | |
| 10. | CAC | Resize the Command Control Window. Lengthen the Status field. | Statuses in the STATUS field can be seen when script is resumed. | |
| 11. | CAC | Turn off CV and TV. Click on Config , Click the Cmd Verification button, Click on Config , Click the Tlm Verification button. | Status of CV is Off, Status of TV is Off | |
| 12. | CAC | Enter the following single valid spacecraft command on the ECL command line: /CDH_DISABLE_CTL1LVIF | Text displayed in DIRECTIVE area of CCW. | Cmd type: #2281 ERT Serial/ CTIU1 |
| 13. | CAC | Click Resume . | “Send/Cancel” displayed in STATUS field. | |
| 14. | CAC | Click Send | STATUS field flashes. Command processed. | |
| 15. | GC | Ensure user connected to a realtime mirrored string from initial startup procedures. | Mirrored connection established | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|--|----------------------------|
| 16. | GC | Request Ground Controller (GC) privilege. TAKE GROUNDCONTROL STRING=100 | Ground Controller authority changed to appropriate user and console. | |
| 17. | GC | Create a string: STRING CREATE SIMULATION SPACECRAFTID=AM1 DATABASEID=1_0 MODE=TEST SERVER=1 | String 101 successfully created. | |
| 18. | GC | Create another string: STRING CREATE SIMULATION SPACECRAFTID=AM1 DATABASEID=2_0 MODE=TEST SERVER=2 | String 102 successfully created. | |
| 19. | CAC2 | Request CAC privilege while a CAC already assigned.. TAKE COMMAND STRING=100 | Command authority changed | Can be former GC position. |
| 20. | CAC2 | Click on Tools button | Tools menu displayed. | |
| 21. | CAC2 | Double-click on Command Control line. | CCW/CMW window is displayed | |
| 22. | CAC2 | In the CCW/CMW window enter: 100 for String ID, AM1 for Spacecraft ID. | Command Control Window (CCW) is displayed, not Command Monitor Window. | |
| 23. | CAC2 | Resize the Command Control Window. Lengthen the Status field. | Statuses in the STATUS field can be seen when script is resumed. | |
| 24. | CAC2 | Turn off CV and TV. Click on Config. Click the Cmd Verification button, Click on Config. | Status of CV is Off, Status of TV is Off | |
| 25. | CAC2 | Enter the following single valid spacecraft command on the ECL command line: /AST_TURN_OFF_C_VDP1 | Text displayed in DIRECTIVE area of CCW. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|---|---|
| 26. | CAC2 | Click Resume. | “Send/Cancel” displayed in STATUS field of AST_TURN_OFF_C_VPD1 command. STATUS field flashes. | |
| 27. | CAC2 | Click Send | Command processed. | There is a 30 sec delay prior to sending the first command. |
| 28. | CAC | At the console previously relieved of CAC authority, request CAC privilege TAKE COMMAND STRING=100 | Command authority changed from CAC2 to CAC. | |
| 29. | CAC | Click on Tools button | Tools menu displayed. | |
| 30. | CAC | Double-click on Command Control line. | CCW/CMW window is displayed | |
| 31. | CAC | In the CCW/CMW window enter: 100 for String ID, AM1 for Spacecraft ID. | Command Control Window (CCW) is displayed, not Command Monitor Window. | |
| 32. | CAC | Resize the Command Control Window. Lengthen the Status field. | Statuses in the STATUS field can be seen when script is resumed. | |
| 33. | CAC | Turn off CV and TV. Click on Config , Click the Cmd Verification button, Click on Config , Click the Tlm Verification button. | Status of CV is Off, Status of TV is Off | |
| 34. | CAC | Enter the following single valid spacecraft command on the ECL command line: /MOD_SET_SR_MTR_GRP GR=61200 SL=0 WH=5 | Text displayed in DIRECTIVE area of CCW. | Cmd type: #1475 ERT Serial MODIS |
| 35. | CAC | Click Resume. | “Send/Cancel” displayed in STATUS field of MOD_SET_SR_MTR_GRP GR=61200 SL=0 WH=5 command. STATUS field flashes. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|---------------------------------|---|
| 36. | CAC | Click Send | Command processed. | There is a 30 sec delay prior to sending the first command. |
| 37. | IST | Connect to a realtime mirrored string. STRING CONNECT STRING=100 CONFIG=MIRROR | Mirrored connection established | ` . |
| 38. | IST | Request Command Activity Controller (CAC) privilege from outside the EOC. TAKE COMMAND STRING=100 | Request denied. | ` . |
| 39. | GC | Delete all strings except String 100. | | |
| 40. | USER1 | Perform Termination Procedures. | | |
| 41. | GC | Perform Termination Procedures. | | |
| 42. | CAC2 | Perform Termination Procedures. | | |
| 43. | CAC | Perform Termination Procedures. | | |

EOC5.3 Logical String Control

Summary of EOC5.3:

Attempt to create an existing string; string create realtime

string connect Mirror by USER1 - view same page, data updated the same

Create and connect to a dedicated logical string

string create simulation - `

string create "playback" - `

string create Test - `

string create Training - `

string connect - Playback, Tailored - `

string delete - `

string connect Test, Tailored - `

Second user string connect Test, Mirrored

Perform Training during “operational” events - ensure operations not affected

string disconnect

string connect Training, Mirrored - `

Second user string connect Training, Mirrored

Perform Training during “operational” events - ensure operations not affected

string disconnect

default logical string creation - `

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|--|----------|
| 1. | GC | Request Ground Controller (GC) privilege. TAKE GROUND CONTROL STRING=100 | Ground Controller authority changed to appropriate user and console. | |
| 2. | GC | Open a page showing the ground configuration. Click TlmWins... Select cfgops1 click OK . | cfgops1 window displayed. GC connected to String 100, Operational mode | |

| Step | Station | Action | Expected Results | Comments |
|------|--------------|--|---|----------|
| 3. | GC | Attempt to create an existing string: STRING CREATE REALTIME SPACECRAFTID=AM1 DATABASEID=1_0 MODE=OPERATIONAL SERVER=1 | Error stating user trying to create a string that already exists. | |
| 4. | GC | Attempt to connect to a non-existent String: STRING CONNECT STRING=101 TYPE=STANDBY CONFIG=MIRROR | Error stating user trying to connect to a non-existent String | |
| 5. | GC | Attempt to create an illegal string: STRING CREATE REALTIME SPACECRAFTID=RLM DATABASEID=1_0 MODE=OPERATIONAL SERVER=1 | Error stating user trying to create an illegal string. | |
| 6. | GC | Display a Page of Housekeeping and Health & Safety data: Enter PAGE EOC51ALPHA1 in the ECL command line. | Page is displayed. | |
| 7. | USER1 | Open a page showing the ground configuration. Click TlmWins... Select cfgops1 click OK . | cfgops1 window displayed. USER1 connected to String 100, Operational Mode | |
| 8. | USER1 | Display the same telemetry data page as GC: Enter PAGE EOC51ALPHA1 in the ECL command line. | EOC51ALPHA1 page is displayed. | |
| 9. | ETS | Initiate transfer of Housekeeping data from EDOS with data that changes. File rt_hk scn . | Housekeeping data being transferred. | |
| 10. | USER1 /GC | Verify Housekeeping and Health & Safety values update at both user stations. | Data display is identical and updated at same rate. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|--|----------|
| 11. | GC | Create a string for test mode: STRING CREATE REALTIME SPACECRAFTID=AM1 DATABASEID=1_0 MODE=TEST SERVER=1 | String 101 successfully created. | |
| 12. | GC | Connect to the Test mode string. STRING CONNECT STRING=101 TYPE=STANDBY CONFIG=MIRROR | Connection accepted. | |
| 13. | GC | Verify configuration on CFGOPS1 Page. | USER1 connected to String 101, Test Mode | |
| 14. | USER1 | Connect to the Test mode string. STRING CONNECT STRING=101 TYPE=STANDBY CONFIG=MIRROR | Connection accepted. | |
| 15. | USER1 | Verify configuration on CFGOPS1 Page. | USER1 connected to String 101, Test Mode | |
| 16. | GC | Create a string for training mode: STRING CREATE REALTIME SPACECRAFTID=AM1 DATABASEID=1_0 MODE=TRAINING SERVER=1 | String 102 successfully created. | |
| 17. | GC | Disconnect from the Operational mode string. STRING DISCONNECT STRING=100 | Connection accepted. | |
| 18. | GC | Connect to the Training mode string. STRING CONNECT STRING=102 TYPE=ALL CONFIG=MIRROR | Connection accepted. | |
| 19. | GC | Close and reopen the telemetry data page Double-click the upper left-hand corner of the EOC51ALPHA1 window. Enter PAGE EOC51ALPHA1 in the ECL command line. | EOC51ALPHA1 page is displayed. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|--|------------|
| 20. | GC | Verify configuration on CFGOPSI Page. PAGE cfgops1 | USER1 connected to String 102, Training Mode | |
| 21. | USER1 | Create a dedicated logical string STRING CREATE REALTIME SPACECRAFTID=AMI DATABASEID1_0 MODE=OPERATIONAL SERVER=TBD (workstation?) | Dedicated logical string created (# 001). ` | OTMpg9-1,2 |
| 22. | USER1 | Connect to the dedicated logical string. STRING CONNECT STRING=001 TYPE=TBD | USER1 connected to string 001 ` | |
| 23. | USER-2 | Attempt to connect to same STRING as USER1: STRING CONNECT STRING=001 TYPE=MIRROR | Alert that no such string exists, or connects to STRING 001 on local workstation. ` | |
| 24. | ~ | STRING CREATE SIMULATION | ` | |
| 25. | ~ | STRING CREATE "PLAYBACK" | ` | |
| 26. | ~ | STRING CONNECT TAILORED | ` | |
| 27. | ~ | STRING DELETE | ` | |
| 28. | ~ | Default logical string creation | ` | |
| 29. | ~ | STRING FAILOVER | ` | |
| 30. | ~ | TRAINING MODE | | |
| 31. | ~ | TEST MODE | | |

EOC5.4 Failover

Summary of EOC5.4:

All failures subject to EOC guidelines & approval !

EOC System Administrator will be present during test (Sys Admin privileges may be required for certain operations)

Open a schematic page to monitor hardware and software changes (color changes)

Monitor colors of schematic to reflect current hardware and software status

Create a failover string -

*cause a **Work Station** to fail (Hardware failure) (198.118.199.xx)*

*cause **Work Station Processes** to fail (Software failure)*

*cause a **Printer** to fail*

power off

*cause the **Time Server** to fail*

*cause the **Primary EBnet Router** to fail (198.118.199.25)*

*cause the **Primary EOC Router** to fail (198.118.199.2 Operational LAN)*

*cause the **FDDI Concentrator** to fail -*

Configure to operate with DS2, FS2, RTS2, and MSS EOC-3 on the Operational LAN

Identify which FDDI Concentrator DS2, FS2, RTS2, and MSS EOC-3 are communicating through (CI preferably)

power off FDDI Concentrator #1 (198.118.199.6)

Monitor smooth transition from FDDI concentrator #1 to FDDI Concentrator #2 (RTS2, FS2, DS2, MSS EOC-3 as applicable)

power off FDDI Concentrator #2 (198.118.199.7)

Observe that DS2 server loses comms with Operational LAN (198.118.199.34)

Observe that FS2 server loses comms with Operational LAN (198.118.199.30)

Observe that RTS2 server loses comms with Operational LAN (198.118.199.32)

Observe that MSS EOC-3 server loses comms with Operational LAN (198.118.199.14)

Monitor DS2 failover to DS3 Server (198.118.199.35)

Monitor FS2 failover to FS3 Server (198.118.199.31)

Monitor RTS2 failover to RTS3 Server (198.118.199.33)

Monitor MSS EOC-3 failover to MSS EOC-? Server (198.118.199.??)

*cause the **FDDI Ethernet Hub (switch?)** to fail -*

- Set up the CAC for commanding, send a cmd*
Power off the Ethernet Switch serving the CAC (198.118.199.xx)
Monitor
Take CAC control at a second WS, and send a command (198.118.199.xx)
cause the FDDI Router to fail -
cause some Real-Time Server Processes on the Operational LAN to fail (Software failure)
cause the RAID to fail
cause the Operational LAN to fail
failover to the Support LAN
restore the Real-Time Server Processes on the Operational LAN
restore the Operational LAN
cause the Data Server on the Support LAN to fail
switch back to the Operational LAN

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|-------------------------------------|----------|
| 1. | ~ | NOTE: Actions to cause the failures are not identified. Details to be worked out with EOC personnel. | Details worked out during dry runs. | |
| 2. | USER1 | Open window to monitor hardware and software status.. | Selected windows displayed. | ' |
| 3. | ~ | Under normal operating conditions, cause the Real-time server to fail and switch over to the standby Real-time server. | ' | ' |
| 4. | ~ | Under normal operating conditions, cause the Data server to fail and switch over to the standby Data server. | ' | ' |
| 5. | ~ | Under normal operating conditions, cause the RAID to fail and switch over to the standby RAID unit. | ' | ' |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|---|---|
| 6. | ~ | Under normal operating conditions, cause the Operational LAN to fail and switchover to the Support LAN. | No single point of failure. | LAN has no single point of failure. c-iss-04040 |
| 7. | EOC | Cause Operational LAN failure. | Operations failover to the Support LAN. | |
| 8. | GC | Notification of status to operator. | | |
| 9. | GC | Ground Controller issue directive to initiate failover process. | RMS software ensures no more than one logical string is supporting the same activity at one time. | 305-043pr3.4 '? |
| 10. | EOC | EOC processes dependent on Operational LAN recover without affecting functions associated with Real-time operations of the spacecraft or instruments.. | | |
| 11. | EOC | Restore Operational LAN to operation. | | |
| 12. | GC | Notification of status to operator. | | |
| 13. | EOC | Events recorded in log file. | | |
| 14. | EOC | EOC processes dependent on Operational LAN transition without affecting functions associated with Real-time operations of the spacecraft or instruments.. | | |
| 15. | ~ | Under normal operating conditions, cause the Time Server to fail and switchover to the standby Time server. | | |
| 16. | EOC | Cause Time Server failure. | | |
| 17. | GC | Notification of status to operator. | | |
| 18. | GC | Ground Controller issue directive to initiate failover process. | RMS software ensures no more than one logical string is supporting the same activity at one time. | Automated switchover, user directive requir'd 305-043pr3.4 |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|------------------|----------|
| 19. | EOC | EOC processes dependent on Time Server recover without affecting functions associated with Real-time operations of the spacecraft or instruments.. | | |
| 20. | EOC | Restore primary Time Server to operation. | | |
| 21. | GC | Notification of status to operator. | | |
| 22. | EOC | Events recorded in log file. | | |
| 23. | EOC | EOC processes dependent on Time Server transition without affecting functions associated with Real-time operations of the spacecraft or instruments.. | | |
| 24. | ~ | Under normal operating conditions, cause the EBnet Router to fail and switch over to the standby EBnet Router. | | |
| 25. | ~ | Under normal operating conditions, cause the FDDI Concentrator to fail and switch over to the standby FDDI concentrator. | | |
| 26. | ~ | Under normal operating conditions, cause the FDDI Ethernet Hub to fail and switch over to the standby FDDI Ethernet hub. | | |
| 27. | ~ | Under normal operating conditions, cause the FDDI Router to fail and switch over to the standby FDDI router. | | |
| 28. | | | | |

EOC5.5 Room Builder

Summary of EOC5.5:

ROOM BUILDER

Create new Permanent Default room EOC55ROOM1

- *include existing Events window*
- *include existing Graph window*
- *include existing Table window*
- *include existing Status window*
- *include existing Schematic window*

Select EOC55ROOM1 for display

Create new Permanent Tile room for EOC55ROOM1

Transmit Housekeeping data from ETS; verify window displays

Select Tile version of EOC55ROOM1 for display

Create temporary EOC55ROOM1

- *Select temporary Room for display; verify window displays*

logout

login -

Select default EOC55ROOM1 for display

verify temporary room settings no longer in effect.

Select tile version of EOC55ROOM1 for display; verify window displays

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|---|------------------|
| 1. | | | | |
| 2. | ~ | Use Room_Builder to create a new permanent room called “EOC55ROOM1”. | | OTM section 7.10 |
| 3. | USER1 | Open the Events_Display Tool window. | The Events_Display window is displayed. | ref:604pr3.4.8.2 |
| 4. | USER1 | Open the page EOC51ALPHA1. | EOC51ALPHA1 window is displayed. | |
| 5. | USER1 | Open the page EOC51TABLE1. | EOC51TABLE1 window is displayed. | |
| 6. | USER1 | Open the page EOC51GRAPH1. | EOC51GRAPH1 window is displayed. | |
| 7. | USER1 | Open the page EOC51SCHEM1. | EOC51SCHEM1 window is displayed. | - |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|--|-----------------------|
| 8. | ~ | Enter Room_Builder and name the room as EOC55ROOM1 and save as a permanent, default room. | | Per OTM 7.10 p7-12 |
| 9. | USER1 | Start Room_Builder (R_B) via menu selections. Tools, Room_Builder (Double-click) | Room Builder displayed | |
| 10. | USER1 | Enter a new room name. Click in the Name: field Type EOC55ROOM1 | | |
| 11. | USER1 | Select desired persistence of the room. Click on Permanent toggle button. | Button appears depressed. | |
| 12. | USER1 | Select desired configuration as default. Click on Default button. | Label next to Default button will display “Defined”. | |
| 13. | USER1 | Click OK . | Room_Builder closes. Pages are displayed as arranged in Room_Builder. | |
| 14. | ~ | Enter Room_Builder and name the room as EOC55ROOM1 and save as a permanent, tiled room. | | Per OTM 7.10 p7-12 |
| 15. | ~ | | | |
| 16. | USER1 | Start Room_Builder (R_B) via menu selections. Tools, Room_Builder (Double-click) | Room Builder displayed | |
| 17. | USER1 | Rearrange the windows. | Windows relocated. | |
| 18. | USER1 | Enter a new room name. Click in the Name: field Type EOC55ROOM1 | | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|---|----------|
| 19. | USER1 | Select desired persistence of the room. Click on Permanent toggle button. | Button appears depressed. | |
| 20. | USER1 | Select desired configuration as default. Click on Tile button. | Label next to Tile button will display “Defined”. | |
| 21. | USER1 | Click OK . | Room_Builder closes. Pages are displayed as arranged in Room_Builder. | |
| 22. | USER1 | Select and display a different room. | EOC55ROOM1 windows are replaced by the new room's windows. | |
| 23. | USER1 | Select and display the EOC55ROOM1 room. | The previous room's windows are replaced by EOC55ROOM1 windows in the default position. | |
| 24. | USER1 | Select Tile . | The EOC55ROOM1 windows are arranged as defined by the TILE setting. | |
| 25. | ETS | Initiate sending Housekeeping data to EOC. | Data received by EOC. | |
| 26. | USER1 | Verify data displayed and updated properly. | The EOC55ROOM1 windows display and are updated correctly. | |
| 27. | ETS | Terminate Housekeeping data. | Data stopped. | |
| 28. | ~ | Temporarily modify the EOC55ROOM1 room: | | |
| 29. | USER1 | Close the table window. | A second Graph window is displayed. | |
| 30. | USER1 | Add a Graph window. | Room saved. | |
| 31. | USER1 | Enter Room Builder and save the new EOC55ROOM1 window arrangement as a temporary, default room. | | |
| 32. | USER1 | Select and display a different room. | EOC55ROOM1 windows are replaced by the new room's windows. | |
| 33. | USER1 | Select and display the EOC55ROOM1 room. | The previous room's windows are replaced by modified EOC55ROOM1 windows. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|---|---------------|
| 34. | USER1 | Terminate the session with “MyKill”, then initiate a new session. Follow User WorkStation startup procedures in Test Setup. | User WorkStation closes. Then comes up after startup. | |
| 35. | USER1 | Select EOC55ROOM1 room. | EOC55ROOM1 windows are displayed as defined in the permanent, default setting (not the temporary settings). | |
| 36. | USER1 | Redisplay main room.. | Main room displayed. | Test cleanup. |

EOC5.6 Procedure Builder

Summary of EOC5.6:

PROCEDURE BUILDER

Open Procedure Builder

Create PROC1

- include many operations (mathematical operations, loops, ifs, gnd cmd, s/c cmd, etc)

Directive Builder

Manual entry (typing)

- syntax check (correct errors until pass), save PROC1

Exit Procedure Builder

Open Procedure Builder

Open existing PROC1

'save as' PROC2

enter invalid commands (mnemonic, submnemonic syntax, and submnemonic value)

syntax check (fail)

confirm detection of all invalid cmd

fix or delete errors

syntax check (pass)

validate PROC2

save PROC2

Save a copy of PROC2 as PROC3

Add 3 commands using Directive Builder

Syntax check

Do NOT save PROC3

Exit Procedure Builder

Copy PROC files to system directory

Open CCW

Execute PROC2

Execute PROC3

Delete PROC2 and PROC3

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|---|----------|
| 1. | USER1 | Open Procedure Builder(PB). In the Control Window: click Tools... select Procedure Builder (double-click) | Procedure Builder screen displayed | |
| 2. | | Open new procedure file. In the menu of the PB's screen: select File select New | An ECL procedure template is displayed | |
| 3. | | Using the Directive Builder and manual entry insert ECL directives. In the menu of the PB's screen: select Tools , select Directive Builder Enter the following ECL directives in the procedure text window: TBD ECL commands TBD ECL commands TBD ECL commands TBD ECL commands At least once use cut , copy , paste , and delete features in the Edit menu. Include one intentional error. | Text appears as typed <i>(mathematical operations, loops, ifs, gnd cmds, s/c cmds, etc</i> | |
| 4. | | Identify the procedure type. In the PB window select ??? from the “Procedure Type” pull-down menu. | ??? displayed as the procedure type. | |
| 5. | | Syntax check the Proc. In the PB window: Click the Check Syntax button. | Check Syntax status changes to FAIL. Error message appears in PB window below the text area. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|--|----------|
| 6. | | Go to the line with the error. In the PB window, in the “Go To:” box: enter the line # of the error | The text area scrolls and the line specified is highlighted. | |
| 7. | | Correct the error, syntax check the Proc again. Click the Check Syntax button. | Check Syntax status changes to PASS. If syntax fails continue correcting errors until Proc passes. | |
| 8. | | Save the Proc. . In the menu of the PB's screen: select File select Save As in the Selection field, enter EOC56PROC1 click OK | File saved in user's directory (default) | |
| 9. | | Exit PB. In the menu of the PB's screen: select Exit | PB window closes | |
| 10. | ~ | Create Proc2 with sc commands. | | |
| 11. | USER1 | Open Procedure Builder(PB). In the Control Window: click Tools... select Procedure Builder click OK | Procedure Builder screen displayed | |
| 12. | | Open new procedure file. In the menu of the PB's screen: select File select Open in the Selection field, enter EOC56PROC1 click OK | EOC56PROC1 procedure is displayed | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|---|----------------------|
| 13. | | Enter the following ECL directives in the procedure text window: TBD invalid command mnemonic syntax TBD invalid command submnemonic syntax TBD invalid command submnemonic value TBD valid commands | Text appears as typed | NO critical commands |
| 14. | | Change the procedure type. In the PB window select ??? from the “Procedure Type” pull-down menu. | ??? displayed as the procedure type. | |
| 15. | | Syntax check the Proc. In the PB window: Click the Check Syntax button. | Check Syntax status changes to FAIL. Error message appears in PB window below the text area. | |
| 16. | | Go to the line with the error. In the PB window, in the “Go To.” box: enter the line # of the error; correct the error (fix or delete); repeat until all errors fixed | The text area scrolls and the line specified is highlighted. | |
| 17. | | Syntax check the Proc again . Click the Check Syntax button. | Check Syntax status changes to PASS. If syntax fails continue correcting errors until Proc passes. | |
| 18. | | Save the Proc. In the menu of the PB's screen: select File select Save As in the Selection field, enter EOC56PROC2 click OK | File saved in user's directory (default) | |
| 19. | | Constraint check the Proc. Click the Validate button. | Proc passes constraint checking | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|---|----------------------|
| 20. | | Save the Proc. . In the menu of the PB's screen: select File select Save click OK to overwrite file | File saved in user's directory (default) | |
| 21. | | Save the Proc again. . In the menu of the PB's screen: select File select Save As in the Selection field, enter EOC56PROC3 click OK | File saved in user's directory (default) | |
| 22. | | Using Directive Builder insert the 3 commands you forgot about. In the menu of the PB's screen: select Tools , select Directive Builder TBD valid command TBD valid command TBD valid command | | NO critical commands |
| 23. | | Syntax check EOC56PROC3 . Click the Check Syntax button. | Check Syntax status changes to PASS. If syntax fails only correct errors caused by the 3 new commands until Proc passes. (There should not be any other errors.) | |
| 24. | | Oops - Don't want those commands in <u>this</u> Proc, DO NOT save Proc . | | SM0dr00313 |
| 25. | | Exit PB. In the menu of the PB's screen: select Exit | PB window closes | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|--|--|
| 26. | | Copy file from User's directory into system directory. In an unused Unix window: cd 'user's directory' ls -atr cp EOC56PROC2 'system directory' cp EOC56PROC3 'system directory' cd 'system directory' ls -atr | File copied to system directory. EOC56PROC2 and 3 appear in list of files EOC56PROC2 and 3 appear in list of files in system directory | May require special access privileges to the system directory. |
| 27. | ~ | Execute both Procs | The list of report files includes: cdb.dat and cdb.nrz. | |
| 28. | EOC | In a UNIX terminal other than where user station was started, cd /fos/test/am1/reports ll -atr | | |
| 29. | EOC | "Clear out" the two report files: cdb.dat and cdb.nrz. If cdb.dat file size is not zero (i.e. commands have been sent prior to this test), the Real Time Server must be brought down and restarted. Follow directions in the Startup procedures. | Cdb.dat file size is zero or small enough not to hinder post test analysis. | For post test analysis, only want commands from this test. |
| 30. | CAC | In the Control Window, take command authority. TAKE COMMAND STRING=100 | In Event_Display observe message that command authority has been assigned. | |
| 31. | CAC | Configure the control center for SN SSA service via the AM1 HGA antenna. In the Control Window's ECL command line, enter: CMDCFG PREREQUISITE=ENABLE PLOP=1 ANT=HGA CHAN=SSA PRIM=1 | Path configuration accepted. Event_Display status message reflects change. | |
| 32. | MPS | Bring up and configure ETS MPS for receiving commands at 10kbps and to transmit telemetry to EOC. | | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|---|----------|
| 33. | CAC | Click on Tools... button Double-click on Command Control line. | Tools menu displayed. CCW/CMW window is displayed | |
| 34. | CAC | In the CCW/CMW window enter: 100 for String ID, AM1 for Spacecraft ID. Click OK . | Command Control Window (CCW) is displayed, not Command Monitor Window. | |
| 35. | CAC | Resize the Command Control Window. Lengthen the Status field. | Statuses in the STATUS field can be seen when script is resumed. | |
| 36. | CAC | Ensure Mode is set to Auto, if not: In the CCW menu, click on Config , Click the Auto button | On CCW upper status bar: Status of Mode is Auto (default) | |
| 37. | CAC | For this Proc execution, turn off PSC, CV and TV. In the CCW menu, click on Config , Click the PSC button Click on Config , Click the Cmd Verification button. Click on Config , Click the Thm Verification button. | On CCW upper status bar: Status of PSC is Off, Status of CV is Off, Status of TV is Off | |
| 38. | CAC | Execute the existing ECL procedure EOC56PROC2. START EOC56PROC2 Press Enter | EOC56PROC2 is displayed in DIRECTIVE area of CCW. | |
| 39. | CAC | Click Resume . | “Send/Cancel” displayed in STATUS field of PROC name. STATUS field flashes. | |
| 40. | CAC | For the PROC, click Send | PROC text is loaded into ground script field and displayed in DIRECTIVE area of CCW. “Send/Cancel” displayed in STATUS field of first command. | |
| 41. | CAC | Monitor PROC execution to ensure proper processing. | All ECL directives properly executed. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|---|------------|
| 42. | CAC | For each command - click Send | Command processed. Event_Display messages reflect correct command and sequence number. | |
| 43. | CAC | Observe command uplink message event messages. | Event messages reflect command activity. | |
| 44. | EDOS | Verify command transmitted by EOC and received by EDOS. | Command received in proper format. | |
| 45. | ~ | Execute EOC56PROC3 | | |
| 46. | CAC | Execute the existing ECL procedure EOC56PROC3. START EOC56PROC3 | EOC56PROC3 is displayed in DIRECTIVE area of CCW. | |
| | | Press Enter | | |
| 47. | CAC | Click Resume . | “Send/Cancel” displayed in STATUS field of PROC name. STATUS field flashes. | |
| 48. | CAC | For the PROC, click Send | PROC text is loaded into ground script field and displayed in DIRECTIVE area of CCW. “Send/Cancel” displayed in STATUS field of first command. | |
| 49. | CAC | Ensure EOC55PROC3 is the same as when saved NOT as modified and syntax checked. | EOC55PROC3 should be the same as EOC55PROC2. | SM0dr00313 |
| 50. | CAC | Monitor PROC execution to ensure proper processing. | All ECL directives properly executed. | |
| 51. | CAC | For each command - click Send | Command processed. Event_Display messages reflect correct command and sequence number. | |
| 52. | CAC | Observe command uplink message event messages. | Event messages reflect command activity. | |
| 53. | MPS | Verify commands transmitted by EOC and received by MPSs. | Command received in proper format. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|--|--|---|
| 54. | CAC | Print Ground Script. In the CCW menu, click File click Print . | Ground Script is printed. | |
| 55. | CAC | Delete EOC56PROC2 and EOC56PROC3 | | Can this be done via Procs button on Control Window ?? SMODr00312 |
| 56. | | Attempt to execute deleted Procs???? | | |
| 57. | EOC | In a UNIX terminal other than where user station was started, cd /fos/test/am1/reports ll -atr | The list of log files includes: cdb.dat and cdb.nrz. | |
| 58. | EOC | Perform a hex dump to analyze files. od -x cdb.dat lp | cdb.dat file is printed in hex. | |
| 59. | EOC | Copy command archive files for future reference. (fill in current “date”) cp cdb.dat /home/ivvtest4/ EOC23_CDBDAT_”date”.STEP70 cp cdb.nrz /home/ivvtest4/ EOC23_CDBNRZ_”date”.STEP70 | cdb.dat copied to ivvtest4 directory. cdb.nrz copied to ivvtest4 directory. | |
| 60. | CAC | Clear out Ground Script commands. Click Suspend , click Kill , click OK . | Ground script is cleared out. | |
| 61. | CAC | Close out CCW. Click File , select Quit , click OK . | Command Control Window closes. | |

| Step | Station | Action | Expected Results | Comments |
|------|---------|---|-----------------------------------|----------|
| 62. | CAC | Save Event_Display data in ivvtest4 directory. (fill in current “date”) In Event_Display menu: Select File , select Save As , enter /home/ivvtest4/evtdis.”date”_eoc23 | File saved in ivvtest4 directory. | |
| 63. | | | | |

Test Termination:

Summary of Procedures

Collect test data needed for reporting or post test analysis
MyKill User Work Stations (UWS)

Close pages and process icons

Ensure all UWS processes/endpoints killed

MyKill Real Time Server (RTS)

Ensure all RTS processes/endpoints killed

MyKill Data Server (DS)

Ensure all DS processes/endpoints killed

Ensure all FOS processes/endpoints killed

| Step | Station | Action | Expected Results | Comment |
|------|---------|--|------------------|---------|
| 1. | UWS | Collect all necessary screen snaps, dumps, etc. needed for post-test analysis and verification. Copy cdb.dat to a file under ivvttest. | | |
| 2. | UWS | Save Event_Display data in ivvttest4 directory. (fill in current “date”) In Event_Display menu: Select File , select Save As , | | |
| 3. | UWS | enter /home/ivvttest4/evtdis.”date” _eoc”xx” Bring down User Work Stations (UWS). In the UNIX window where the user station was initiated, enter: MyKill | | |
| 4. | UWS | After UWS killed, check for undesirable processes. ps -ax | | |
| 5. | UWS | Open any iconized processes, or pages that didn’t close. Close the windows. Under the File menu heading select Quit . | Window closes. | |

| Step | Station | Action | Expected Results | Comment |
|------|---------|---|--|---------|
| 6. | UWS | Kill all undesirable processes - Processes with a /fos/test/aml/bin/... prefix and owner is not "root" (there may be others). Initially, as process owner, use MyKill to shutdown the process. If processes are still active use kill “pid” for each undesirable process. Type ps -ef again to verify. | Notes: The user may need to be logged in as the owner of the processes in order to kill them. | |
| 7. | UWS | Bring up the FOS Homepage on Netscape (May be already open in mss2eo SUN room 2): netscape | FOS Database Access Page displayed. If not automatically displayed, check Netscape's bookmarks. If no bookmark enter the url: http://198.118.199.20/FosDbHome.html | |
| 8. | UWS | Verify no endpoints exist on UWS: Click on Nameserver Database Click on Clear Form In EntryID field enter: fos#oe (where # is UWS number) Click on Submit . | “Total matches = 0”. Note: If any endpoints exist recheck for live processes/endpoints on the UWS using ps -ax . They must all be removed/killed prior to system startup. As a last resort use Kill -9 “pid”. | |
| 9. | RTS | Bring down Real Time Server (foseoc6). In the UNIX window where the RTS was initiated, enter: MyKill | Wait 1-5 minutes | |
| 10. | RTS | After RTS killed, check for undesirable processes. ps -ef | | |
| 11. | RTS | Kill all undesirable processes - Processes with a /fos/test/aml/bin/... prefix and owner is not "root" (there may be others). Initially, as process owner, use MyKill to shutdown the process. If processes are still active use kill “pid” for each undesirable process. Type ps -ef again to verify. | Notes: The user may need to be logged in as the owner of the processes in order to kill them. | |

| Step | Station | Action | Expected Results | Comment |
|------|---------|---|--|---------|
| 12. | RTS | Bring up the FOS Homepage on Netscape (May be already open in mss2eoc SUN room 2): netscape | FOS Database Access Page displayed. If not automatically displayed, check Netscape's bookmarks. If no bookmark enter the url: http://198.118.199.20/FosDbHome.html | |
| 13. | RTS | Verify no endpoints exist on RTS: Click on NameServer Database Click on Clear Form In EntryID field enter: foseoc6 Click on Submit . | “Total matches = 0”. Note: If any endpoints exist recheck for live processes/endpoints on the Real Time Server using ps -ef. They must all be removed/killed prior to system startup. As a last resort use Kill -9 “pid”. | |
| 14. | DS | Bring down Data Server (foseoc7). In the UNIX window where the RTS was initiated, enter: MyKill | Wait 1-5 minutes. | |
| 15. | DS | After DS killed, check for undesirable processes. ps -ef | | |
| 16. | DS | Kill all undesirable processes - Processes with a /fos/test/aml/bin/ ... prefix and owner is not “root” (there may be others). Initially, as process owner, use MyKill to shutdown the process. If processes are still active use kill -USR1 “pid” for each active process, then use kill -9 “pid” for each undesirable process. Type ps -ef again to verify. | Notes: “kill -USR1” saves data created since the Data Server was brought up. Use “kill -9” only after “kill -USR” on the Data Server or Real Time Server; or data may be lost. The user may need to be logged in as the owner of the processes in order to kill them. | |
| 17. | DS | Bring up the FOS Homepage on Netscape (May be already open in mss2eoc SUN room 2): netscape | FOS Database Access Page displayed. If not automatically displayed, check Netscape's bookmarks. If no bookmark enter the url: http://198.118.199.20/FosDbHome.html | |

| Step | Station | Action | Expected Results | Comment |
|------|---------|--|--|---------|
| 18. | DS | Verify no endpoints exist on DS: Click on Nameserver Database Click on Clear Form In EntryID field enter: fosoc7 Click on Submit . | “Total matches = 0”. Note: If any endpoints exist recheck for live processes/endpoints on the Data Server using ps -ef . They must all be removed/killed prior to next system startup. | |
| 19. | EOC | Verify no endpoints exist on FOS: Click on Nameserver Database Click on Clear Form Click on Submit . | “Total matches = 0”. Note: If any endpoints exist recheck for live processes/endpoints on the User Work Stations, Real Time Server, and Data Server using ps -ef or ps -ax. All processes must be removed/killed prior to system startup. | |
| 20. | | | | |

Appendix: Test Package Requirements Summary

RELEASE B

| Requirement | Description | Test Cases |
|------------------------------|--|--|
| EOC-3080#B | The EOC shall generate, validate, and store preplanned spacecraft commands for later use in emergency situations to protect the health and safety of the spacecraft. | EOC5.6 |
| EOC-8130#B | The EOC shall allow operator override for reconfiguration requests that violate operational constraints. | EOC5.4 |
| EOC-8140#B | The EOC shall manage initialization and shutdown of EOC functions. | EOC5.3 EOC5.4 |
| EOC-8160#B | The EOC shall alert the operator when its status changes or when data errors exceed operator-specified levels. | EOC5.4 |
| EOC-8220#B | The EOC shall manage its faults including at a minimum the following: a. Fault identification and reporting b. Identification of recommended solutions c. Log of fault activities through resolution | EOC5.4 |
| EOC-8240#B | The EOC shall be capable of initiating diagnostics to aid in isolating internal faults, using safeguards to prevent their operations from affecting other operations. | EOC5.4 |
| EOC-9010#B | The EOC shall provide the capability for the operator to control the EOC functions and components, utilizing a combination of input devices. | EOC5.1 EOC5.2 EOC5.3 EOC5.4 EOC5.5 EOC5.6 |
| EOC-9020#B | The EOC shall provide the capability for the operator to send to displays, printers, and files spacecraft, instrument, and ground system information used or generated by each EOC function. | EOC5.1 EOC5.2 EOC5.3 EOC5.4 EOC5.5 EOC5.6 |
| EOC-9080#B | The EOC shall provide the operator with the capability to create, modify, and delete user interface language procedures. | EOC5.6 |
| EOC-9110#B | The EOC shall respond to operator inputs within 0.5 seconds | EOC5.1 EOC5.2 EOC5.3 EOC5.4 EOC5.5 EOC5.6 |
| EOSD3710#B <i>Partial</i> | The ECS shall have no single point of failure for functions associated with real-time operations of the spacecraft and instruments. | EOC5.4 |
| FOS-0020#B | The FOS shall provide a training mode of operation for use during operator training and/or user training that does not interfere with ongoing operations. | EOC5.3 |
| FOS-0025#B | The FOS shall provide a test mode of operation that does not interfere with ongoing operations, and which supports independent element and subsystem tests, end-to-end tests, and integration and verification activities occurring during at a minimum: a. Spacecraft and instrument integration and test b. Pre-launch c. Upgrades and enhancements | EOC5.3 |